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FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			BLOUNT, ERIC	
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Eric M.. Blount

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On November 15, 2007 an order returning the undocketed appeal was received in this application. In response to said order, a certified English translation of Tatsuno JP 57022947 is enclosed with this correspondence.

  
BENJAMIN Q. LEE  
PRIMARY EXAMINER

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SERVICE STATION EQUIPPED WITH FIRE SENSORS  
[Kasai kenchiki-tsuki kyuyusho]

Hiyoshi Tatsuno

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INVENTOR (72): Hiyoshi Tatsuno

APPLICANT (71): Tokyo Tatsuno Co., Ltd.

TITLE (54): SERVICE STATION EQUIPPED WITH FIRE  
SENSORS

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## Claim

A service station equipped with fire sensors characterized in that said fire sensors are installed in certain locations of the service station, and in that electric power supplied to the aforementioned service station is stopped in response to an output from said fire sensors in order to stop the fueling operation.

## Detailed explanation of the invention

The present invention pertains to a service station equipped with fire sensors, wherein a fire at the service station is immediately detected and fueling devices installed at the service station are stopped for the sake of safety.

When a fueling device installed at a conventional service station was a fixed fueling device, its power supply was turned on as the fuel nozzle was removed from the nozzle boot, or as the fuel nozzle was brought to the fueling position in the case of a suspended fueling device; the amount of the fuel that was fed the last time the device was used and that was displayed on the indicator was reset; the pump motor began to run, and the fuel could be supplied once the fuel nozzle valve was opened under said condition.

Therefore, even in the event of a fire caused by accident while the fuel was being fed, the pump motor kept running until the fuel nozzle was returned to the nozzle boot or returned from the fueling position to the non-fueling position. As a result, the fuel was fed continuously, resulting in a dangerous situation in that the fuel would easily catch fire.

The present invention aims to stop fueling devices automatically in response to an output from fire sensors for the sake of safety regardless of the positions of fuel nozzles; and it pertains to a service station equipped with fire sensors characterized in that fire sensors are installed at certain locations in a service station, and drive circuits are opened up so as to stop the fueling devices in response to an output from said fire sensor.

Next, an application example of the present invention will be explained with reference to figures.

Figure 1 shows the overall view of a service station, wherein suspended fueling devices 3, 3', ... are installed on canopy 2 of service station 1, and fixed fueling device 3" is installed on island 4.

Fire sensors 10, 10', 10", ... are attached at appropriate locations, for example, at canopy 2, lubrication section 5, hose housing 6, nozzle 7, firewall 8, and office 9, of service station 1.

Commercially available fire sensors that generate an output upon detecting fire, smoke, and/or heat may be used as said fire sensors 10, 10', 10", ....

In the figure, 11 represents a control panel over fueling devices 3, 3', 3", ...; and 12 represents an alarm unit for reporting the outbreak of a fire.

Figure 2 is an outer front view of control panel 11 provided inside of office 9, wherein switch 13 for turning a power supply on, fueling device ready-state indication lamp 14, fire outbreak lamp 15, switch 16 for stopping the fire outbreak notification, switch 17 for canceling a halt after the fire is extinguished, and emergency stop switch 18 are provided on control panel 11 in such a manner that they can be operated externally.

A circuit used in the present invention will be explained with reference to Figure 3. Relay 20 is connected to fire sensors 10, 10', 10", ... that are connected in parallel, relays 21 and 22 are connected in series with post-extinction halt cancellation switch 17 via changeover contact 22' for relay 22, and relay 22 is connected in series with a parallel circuit that comprises contact A 20' of relay 20 and emergency stop switch 18.

Fire outbreak lamp 15 and contact A 22" of relay 22 are connected in series.

A series circuit, which comprises relay 23 and fire outbreak notification stop switch 16, and a series circuit, that comprises fire outbreak notification alarm unit 12 and contact A 23' of relay 23, are connected to changeover contact 22"" of relay 22; and contact A 23" of relay 23 is connected in parallel with changeover contact 22"" of relay 22.

Contact A 21' of relay 21 is connected in series with fueling device ready state indication lamp 14. Power supply 24 is connected to fueling devices 3, 3', 3", ... via power-on switch 13 and contact A 21" of relay 21.

Next, the operation will be explained. As shown in Figure 4, during fueling, because switch 17 and contact 22' are closed when switch 13 is closed, relay 21 is energized, contact 21' is closed to turn fueling device ready state indication lamp 14 on, and contact 21" is closed in order to get fueling devices 3, 3', 3", ... ready for fueling.

In addition, relay 23 is also energized, contact 23" is closed and held, and contact 23' is closed. However, because changeover contact 22"" is open, alarm unit 12 is not activated.

When a fire breaks out, as shown in Figure 5, out of fire sensors 10, 10', 10", ..., the sensor closest to the location where the fire broke out detects the fire, relay 20 is energized to close its contact 20'. Contact 20' may open soon after in some cases.

Once contact 20' is closed, relay 22 is energized, changeover contact 22' and 22" are switched, and contact 22" is closed.

As changeover contact 22' is switched, relay 22 is held, relay 21 is energized so as to open contact 21', fueling device ready-state indication lamp 14 is turned off, and contact 21" is opened, so that fueling device 3, 3', 3", ... can no longer supply fuel.

As changeover switch 22"" is switched, alarm unit 12 is activated, and contact 22" is closed so as to turn fire outbreak lamp 15 on.

To stop the operation of alarm unit 12, once switch 16 is opened, relay 23 is energized so as to open contact 23" to cancel the holding, and contact 23' is opened so as to stop the sound of alarm unit 12.

Once the fire is extinguished, when switch 17 is depressed and then momentarily released, relay 22 is no longer energized, changeover switches 22' and 22"" return upright, relay 21 is energized so as to close contact 21", and the fueling ready-state is achieved as shown in Figure 4.

To stop fueling devices 3, 3', 3", ... quickly when there is no outbreak of fire, the same operations as those in the event of a fire are carried out when switch 18 is closed momentarily, and contact 21" is opened so as to stop the fueling operation.

In the case of the service station of the present invention, because the fueling devices are no longer operable and fueling is disabled, when a fire breaks out, the catastrophic event that would have occurred if the fire intensified as the fuel was sent to the underground storage tank can be prevented.

#### Brief description of the figures

Figure 1 is a perspective view of the service station of the present invention. Figure 2 is a front view of a control panel. Figure 3 is a wiring diagram when not used. Figure 4 is a wiring diagram when fuel is ready to be fed. Figure 5 is a wiring diagram when a fire sensor is activated.

1: service station; 3, 3', 3": fueling device; and 10: fire sensor.

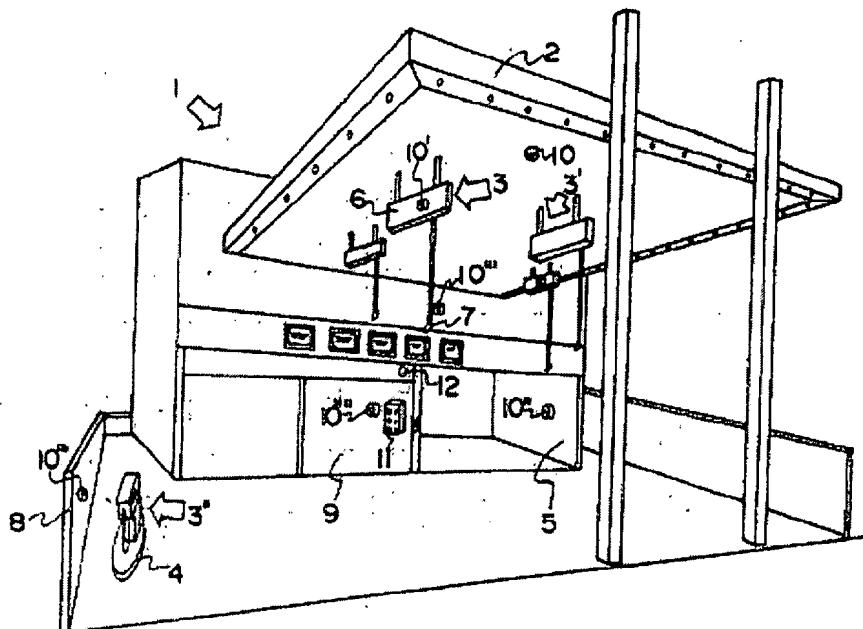


Figure 1

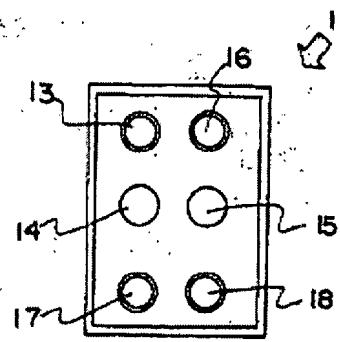


Figure 2

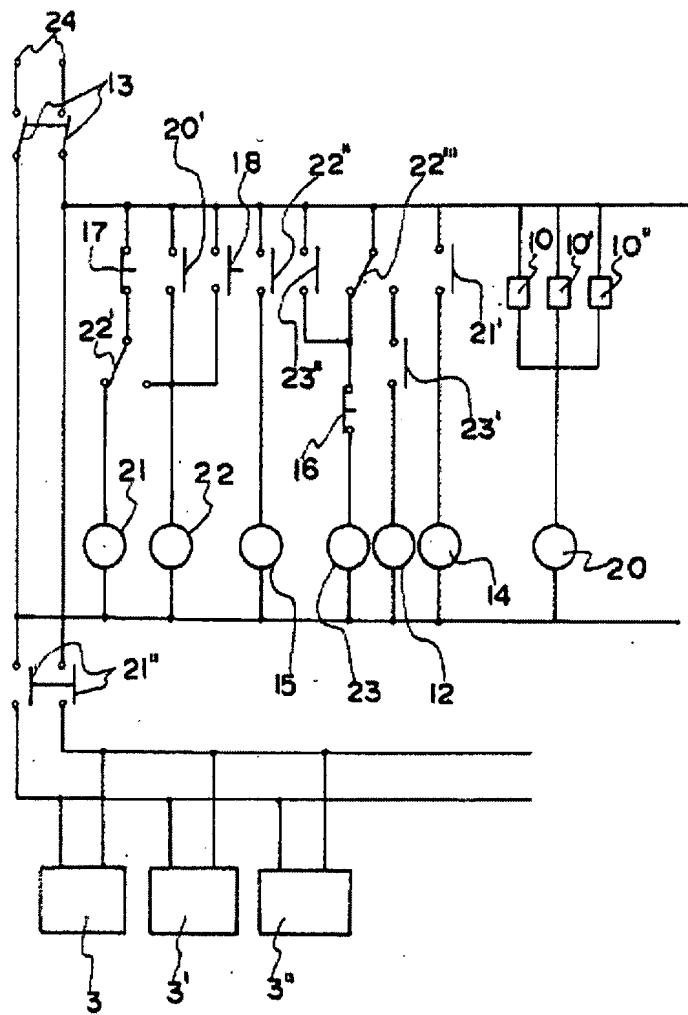


Figure 3

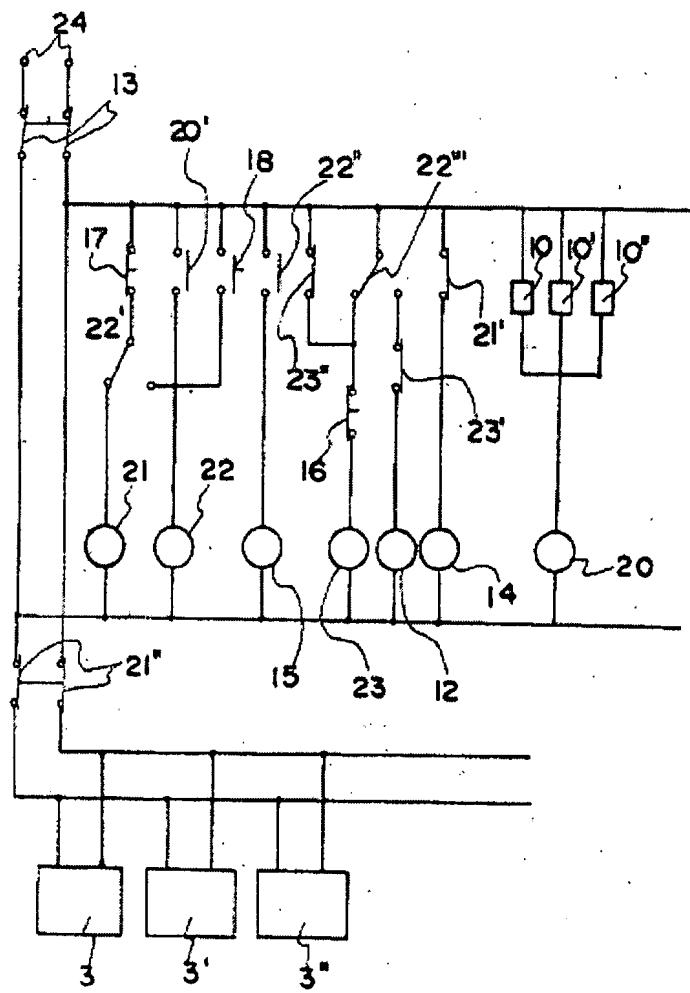


Figure 4

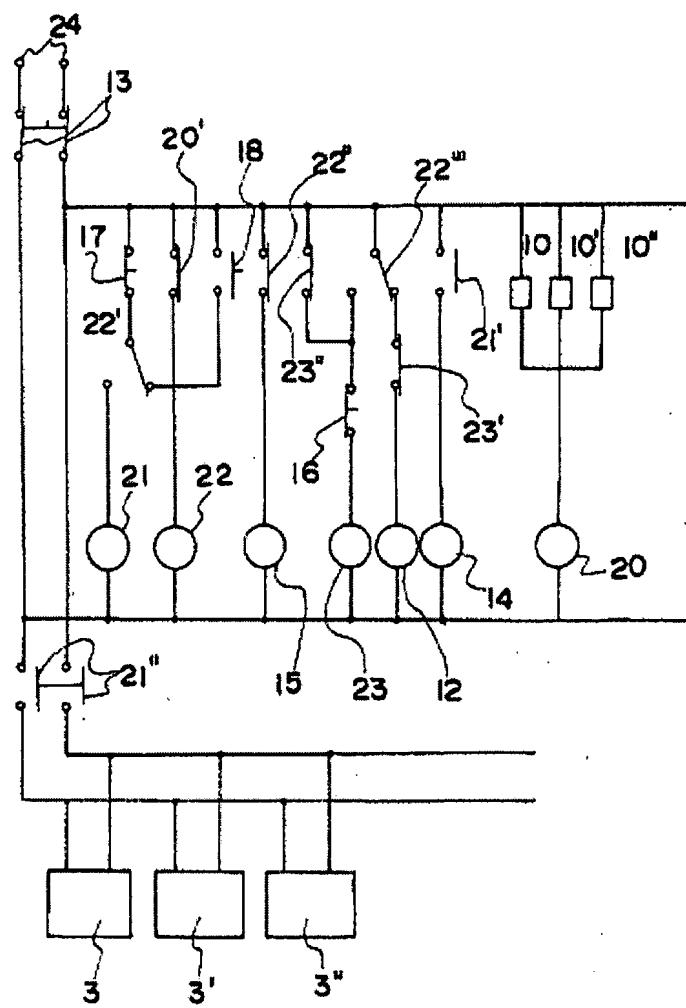


Figure 5